CLAIMS:

1. An electronic circuit device for executing operations dependent on secret information, the electronic circuit device, comprising:

- power supply connections (Vdd, Vss);
- a processing unit (10) comprising a plurality of processing circuits (102, 106) for use in execution respective parts of the operations dependent on the secret information, the processing circuits (102, 106) being fed from the power supply connections (Vdd, Vss);
- an activity monitor circuit (12a,b, 14), coupled to receive pairs of processing signals coming into and out of respective ones of the processing circuits (102, 106), the activity monitor circuit (12a,b, 14) being arranged to derive activity information derived from each pair of processing signals, and to derive from the activity information a combined activity signal indicative of a sum of power supply currents that will be consumed by the processing circuits dependent on the processing signals;
- a current drawing circuit (18) connected to the power supply connections (Vdd, Vss) and controlled by the activity monitor circuit (12a,b, 14) to draw a cloaking current controlled by the combined activity signal, so that power supply current variations dependent on the secret information are cloaked in a combination of the cloaking current and current drawn by the processing circuits (102, 106).

2. An electronic circuit device according to Claim 1, wherein the processing unit comprises a clock circuit (20), combinatorial logic circuits and registers (102, 106) clocked by the clock circuit (20) and connected between respective parts of the combinatorial logic circuits, the pairs of processing signals comprising pairs of input and output signals of the registers (102, 106), the current drawing circuit (18) being arranged to adjust a value of the cloaking current dependent on the activity of the registers (102, 106) at instants synchronized by the clock circuit (20).

3. An electronic circuit device according to Claim 2, organized as a pipe-line of successive parts of the combinatorial circuits, each pair of successive parts coupled via a

respective one or respective ones of the registers (102, 106), the electronic circuit, comprising:

- a plurality of activity monitor circuits (30, 32), each coupled to receive pairs of input and output signals of the respective one or ones of the registers (102, 106) between a respective pair of successive parts of the combinatorial circuits, and to derive a combined activity signal from the pairs of input output signals;
- a plurality of current drawing circuits (320, 322) connected to the power supply connections, each controlled by a respective one of the activity monitor circuits (30, 32) to draw a cloaking current controlled by combined activity signal derived by that respective one of the activity monitor circuits.

4. An electronic circuit device according to Claim 3, arranged to activate the current drawing circuits (320, 322) in selected clock cycles, when the corresponding pipe-line stages process secret information.

5. An electronic circuit device according to Claim 1, having a trigger input coupled to the current drawing circuit (18), arranged to enable drawing of the cloaking current only upon receiving a trigger signal that triggers or accompanies execution of a secret information dependent process in the electronic circuit.

6. An electronic circuit device according to Claim 1, comprising a reference current pattern generator (15), the current drawing circuit (18) being arranged to adjust the value of the cloaking current so that the combination of the cloaking current and current drawn by the processing circuits substantially equals a temporal reference current pattern generated by the reference current pattern generator (15).

7. A method of executing operations dependent on secret information in an electronic circuit, the method comprising:

- supplying power supply current to processing circuits (102, 106);
- executing respective parts of operations that dependent on the secret information using the processing circuits (102, 106);
- receiving pairs of processing signals coming into and out of respective ones of the processing circuits (102, 106);
- deriving activity information from each pair of processing signals,

- deriving from the activity information a combined activity signal indicative of a sum of power supply currents that will be consumed by the processing circuits dependent on the processing signals;
- drawing a cloaking current controlled by the combined activity signal, and combining that cloaking current with current drawn by the processing circuits so that power supply current variations dependent on the secret information are cloaked in the combination of the cloaking current and current drawn by the processing circuits.